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ABSTRACT

The present invention is a safety-enhancing automatic brake control system that automatically applies and maintains the brakes in the applied state, when one or more conditions exist at various stations around/in the vehicle or equipment that make vehicle movement dangerous. The preferred control system provides a controller electrically, electronically, or otherwise connected to various sensors at the vehicle stations. When a sensor signals an unsafe condition to the controller, the controller validates the signal and then actuates a mechanism that manages the air, brake fluid, or mechanical brake linkage/cable that applies the brakes. In an air-brake system, the management mechanism is a solenoid valve cutting off the air supply and venting the air line to release a piston that normally counteracts a spring mechanism, so that the spring mechanism may apply the brakes. In the preferred hydraulic brake system, the management mechanism comprises a piston or spring, for example, that powers a secondary piston rod and piston in a master cylinder to apply the brakes. In the case of a spring-actuated system, a release unit such as a piston may be used to counteract the spring for releasing the brakes. The station sensors may include the vehicle ignition, one or more vehicle doors, a wheelchair lift, a dump truck bed, a backhoe arm, a crane boom, outrigger, a tire pressure sensor, an air pressure sensor, an engine oil pressure sensor, an emissions sensor, an alcohol analyzer, a motion detector, a sensor of people or objects in the vicinity of the vehicle, or other sensors in, around, or near a vehicle. In use, if the driver does not manually set the parking brake whenever there is a condition about to take place that makes vehicle movement potentially dangerous, the invented control system automatically sets a brake as soon as the condition is sensed and validated by the invented controller. The control system preferably includes a vehicle motion override system that prevents automatic application of the brakes if the vehicle is in motion above a set speed, and a manual brake-releasing override that allows a driver to override the controller temporarily at the driver's discretion.

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